

WHAT WE CLAIM IS:

1. A dual field metal detector, comprising:
 a transmit coil,
 a first receive coil positioned offset from said transmit coil such that said first receive coil does not overlap said transmit coil, wherein said transmit coil and said first receive coil define a first detection field,
 a second receive coil positioned such that said second receive coil at least partially overlaps said transmit coil, wherein said transmit coil and said second receive coil define a second detection field which is smaller than said first detection field and is substantially encompassed within said first detection field,
 a frame supporting said transmit and said receive coils, and
 a metal detector circuit connected to said transmit and said receive coils for detecting the presence of metal objects in said detection fields.

2. A dual field metal detector as recited in Claim 1 wherein said first detection field is elongate, said second detection field is positioned substantially at one end of said first detection field.

3. A dual field metal detector as recited in Claim 1 wherein said first receive coil is positioned perpendicular to said second receive coil.

4. A dual field metal detector as recited in Claim 1 wherein said transmit coil is perpendicular to said first receive coil.

5. A dual field metal detector as recited in Claim 1 wherein said transmit coil and said second receive coil are coplanar and coaxial.

6. A dual field metal detector as recited in Claim 1 wherein said transmit coil and said first receive coil are rectangular.

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7. A dual field metal detector as recited in Claim 1 wherein said second receive coil is elliptical.

8. A dual field metal detector as recited in Claim 1 wherein said metal detector circuit has two signal processing channels which are respectively connected to receive signals from said first and second receive coils.

9. A dual field metal detector as recited in Claim 1 wherein said metal detector circuit has one signal processing channel and further includes a switch for selectively coupling said signal processing channel to either said first receive coil or said second receive coil.

10. A dual field metal detector as recited in Claim 1 wherein said metal detector circuit includes circuitry for detecting the size and depth of a one of said metal objects.

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11. A dual field metal detector, comprising:

a receive coil,

a first transmit coil positioned offset from said receive coil such that said first transmit coil does not overlap said receive coil, wherein said receive coil and said first transmit coil define a first detection field,

a second transmit coil positioned such that said second transmit coil at least partially overlaps said receive coil, wherein said receive coil and said second transmit coil define a second detection field which is smaller than said first detection field and is substantially encompassed within said first detection field,

a frame supporting said receive and said transmit coils, and

a metal detector circuit connected to said receive and said transmit coils for detecting the presence of metal objects in said detection fields.

12. A dual field metal detector as recited in Claim 11 wherein said first detection field is elongate, said second detection field is positioned substantially at one end of said first detection field.

13. A dual field metal detector as recited in Claim 11 wherein said first transmit coil is positioned perpendicular to said second transmit coil.

14. A dual field metal detector as recited in Claim 11 wherein said receive coil is perpendicular to said first transmit coil.

15. A dual field metal detector as recited in Claim 11 wherein said receive coil and said second transmit coil are coplanar and coaxial.

16. A dual field metal detector as recited in Claim 11 wherein said receive coil and said first transmit coils are rectangular.

17. A dual field metal detector as recited in Claim 11 wherein said second transmit coil is elliptical.

18. A dual field metal detector as recited in Claim 11 wherein said metal detector circuit includes circuitry for detecting the size and depth of a one of said metal objects.

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